

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-45. (Canceled)

46. (Currently Amended) A semiconductor device comprising:

a first thin film transistor formed over an insulating surface, the first thin film transistor comprising:

a semiconductor film comprising crystalline silicon and having at least source and drain regions and a channel forming region;

a gate insulating film adjacent to ~~over~~ the channel forming region with the gate insulating film interposed therebetween; and

a gate electrode adjacent to ~~formed over~~ the gate insulating film;

~~an interlayer insulating film formed over the first thin film transistor;~~

a first conductive layer ~~formed over the interlayer insulating film and~~ electrically connected to one of the source and drain regions of the first thin film transistor ~~through a first opening;~~

a passivation film comprising a silicon nitride over the first conductive layer;

a color filter formed over the passivation film ~~interlayer insulating film and the first conductive layer~~, wherein a first ~~second~~ opening is formed in the color filter; and

an insulating film formed over the color filter, wherein a second opening is formed in the insulating film, and

a pixel electrode formed over ~~the color filter~~ the insulating film and electrically connected to the first conductive layer through the first and second openings,

~~wherein the color filter covers the entire first thin film transistor and the entire semiconductor film except an area where the second opening is formed, and~~

~~wherein the second opening does not overlap the first opening;~~

~~wherein the passivation film is interposed between the first conductive layer and the color filter so that the first conductive layer is not in contact with the color filter, and~~

~~wherein the pixel electrode is in contact with a portion of the color filter in the first second opening.~~

47. (Currently Amended) A semiconductor device comprising:

a first thin film transistor formed over an insulating surface, the first thin film transistor comprising:

a semiconductor film comprising at least a channel forming region;

a gate insulating film adjacent to the channel forming region; and

a gate electrode adjacent to the gate insulating film,

~~an interlayer insulating film formed over the first thin film transistor;~~

~~a first conductive layer formed over the interlayer insulating film and electrically connected to one of source and drain regions of the first thin film transistor through a first opening;~~

~~a passivation film comprising a silicon nitride over the first conductive layer;~~

~~a color filter formed over the passivation film interlayer insulating film and the first conductive layer, wherein a first second opening is formed in the color filter; and~~

an insulating film formed over the color filter, wherein a second opening is formed in the insulating film, and

a pixel electrode formed over ~~the color filter~~ the insulating film and electrically connected to the first conductive layer through the first and second openings,

~~wherein the color filter covers the entire first thin film transistor and the entire semiconductor film except an area where the second opening is formed, and~~

~~wherein the second opening does not overlap the first opening,~~

wherein the second opening completely overlaps the first opening, and

wherein the pixel electrode is in contact with a portion of the color filter in the first second opening.

48-51 (Canceled)

52. (Currently Amended) A semiconductor device comprising:

a first thin film transistor formed over an insulating surface, the first thin film transistor comprising:

a semiconductor film comprising ~~crystalline silicon and~~ having at least source and drain regions and a channel forming region;

a gate insulating film adjacent to the channel forming region; and

a gate electrode ~~formed~~ adjacent to the channel forming region with the gate insulating film interposed therebetween;

~~a first interlayer insulating film formed over the first thin film transistor;~~

a first conductive layer ~~formed over the first interlayer insulating film~~ and electrically connected to one of the source and drain regions of the first thin film transistor ~~through a first opening~~;

a passivation film formed over the first conductive layer, the passivation film comprising at least a material selected from the group consisting of silicon nitride, silicon oxide and nitrated silicon oxide;

a color filter formed over the passivation film, wherein a first ~~second~~ opening is formed in the color filter; and

an insulating film formed over the color filter, wherein a second opening is formed in the insulating film, and

a pixel electrode formed over ~~the color filter~~ the insulating film and electrically connected to the first conductive layer through the first and second openings,

~~wherein the color filter covers the entire first thin film transistor and the entire semiconductor film except an area where the second opening is formed, and~~

~~wherein the second opening does not overlap the first opening;~~

wherein the passivation film is interposed between the first conductive layer and the color filter so that the first conductive layer is not in contact with the color filter, and

wherein the pixel electrode is in contact with a portion of the color filter in the first ~~second~~ opening.

53-55. (Canceled)

56. (Currently Amended) A semiconductor device comprising:

a first thin film transistor formed over an insulating surface, the first thin film transistor comprising:

a semiconductor film comprising:

a channel forming region; and

a source region and a drain region;

a gate insulating film adjacent to over the channel forming region with the gate insulating film interposed therebetween; and

a gate electrode adjacent to over the gate insulating film;

~~an interlayer insulating film formed over the first thin film transistor;~~

a first conductive layer ~~formed over the interlayer insulating film and~~ electrically connected to one of the source and drain regions of the first thin film transistor ~~through a first opening~~;

a passivation film comprising a silicon nitride over the first conductive layer;

a color filter formed over the passivation film ~~interlayer insulating film, the first conductive layer and the first thin film transistor~~, wherein a first second opening is formed in the color filter; and

an insulating film formed over the color filter, wherein a second opening is formed in the insulating film, and

a pixel electrode formed over ~~the color filter~~ the insulating film and electrically connected to the first conductive layer through the first and second openings,

~~wherein the color filter covers the entire first thin film transistor and the entire semiconductor film except an area where the second opening is formed, and~~

~~wherein the second opening does not overlap the first opening.~~

wherein the passivation film is interposed between the first conductive layer and the color filter so that the first conductive layer is not in contact with the color filter, and

wherein the pixel electrode is in contact with a portion of the color filter in the first second opening.

57. (Canceled)

58. (Currently Amended) A semiconductor device comprising:

a first thin film transistor formed over an insulating surface, the first thin film transistor comprising:

a semiconductor film comprising:

a channel forming region; and

a source region and a drain region;

a gate insulating film adjacent to the channel forming region; and

a gate electrode adjacent to the channel forming region with the gate insulating film interposed therebetween;

~~a first interlayer insulating film formed over the first thin film transistor;~~

~~a first conductive layer formed over the first interlayer insulating film and electrically connected to one of the source and drain regions of the first thin film transistor through a first opening;~~

a passivation film comprising a silicon nitride formed over the first conductive layer, ~~the passivation film comprising at least a material selected from the group consisting of silicon nitride and nitrated silicon oxide;~~

a color filter formed over the passivation film ~~and the first thin film transistor~~, wherein a first ~~second~~ opening is formed in the color filter; and

an insulating film formed over the color filter, wherein a second opening is formed in the insulating film, and

a pixel electrode formed over ~~the color filter~~ the insulating film and electrically connected to the first conductive layer through the first and second openings,

~~wherein the color filter covers the entire first thin film transistor and the entire semiconductor film except an area where the second opening is formed, and~~

~~wherein the second opening does not overlap the first opening,~~

wherein the second opening completely overlaps the first opening, and

wherein the pixel electrode is in contact with a portion of the color filter in the first ~~second~~ opening.

59. (Currently Amended) A semiconductor device comprising:

a first thin film transistor comprising:

a semiconductor film comprising: ~~at least a channel forming region;~~

a channel forming region; and

a source region and a drain region;

a gate insulating film adjacent to ~~over~~ the channel forming region with the gate insulating film interposed therebetween; and

a gate electrode adjacent to ~~over~~ the channel forming region with the gate insulating film interposed therebetween;

~~an interlayer insulating film formed over the first thin film transistor;~~

a first conductive layer ~~formed over the interlayer insulating film and~~ electrically connected to one of source and drain regions of the first thin film transistor ~~through a first opening;~~

a passivation film formed over the first conductive layer, the passivation film comprising at least a material selected from the group consisting of silicon nitride, silicon oxide and nitrated silicon oxide;

a color filter formed over the passivation film ~~interlayer insulating film, the first conductive layer and the first thin film transistor~~, wherein a first ~~second~~ opening is formed in the color filter; and

an insulating film formed over the color filter, wherein a second opening is formed in the insulating film, and

a pixel electrode formed over ~~the color filter~~ the insulating film and electrically connected to the first

conductive layer through the first and second openings,

~~wherein the color filter covers the entire first thin film transistor and the entire semiconductor film except an area where the second opening is formed, and~~

~~wherein the second opening does not overlap the first opening,~~

wherein the passivation film is interposed between the first conductive layer and the color filter so that the first conductive layer is not in contact with the color filter, and

wherein the pixel electrode is in contact with a portion of the color filter in the first ~~second~~ opening.

61. (Currently Amended) A semiconductor device comprising:

a first thin film transistor comprising:

a semiconductor film comprising silicon and comprising having at least a channel forming region, a source region, and a drain region;

a gate insulating film adjacent to the channel forming region; and

a gate electrode adjacent to the channel forming region with the gate insulating film interposed therebetween;

~~a first interlayer insulating film formed over the first thin film transistor;~~

a first conductive layer ~~formed over the first interlayer insulating film and~~ electrically connected to one of the source and drain regions of the first thin film transistor ~~through a first opening;~~

a passivation film formed over the first conductive layer, the passivation film comprising at least a material selected from the group consisting of silicon nitride and nitrated silicon oxide;

a color filter formed over the passivation film ~~and the first thin film transistor~~, wherein a first ~~second~~ opening is formed in the color filter; and

an insulating film formed over the color filter, wherein a second opening is formed in the insulating film, and

a pixel electrode formed over ~~the color filter~~ the insulating film and electrically connected to the first conductive layer through the first and second openings,

~~wherein the color filter covers the entire first thin film transistor and the entire semiconductor film except an area where the second opening is formed, and~~

~~wherein the second opening does not overlap the first opening;~~

wherein the second opening completely overlaps the first opening, and

wherein the pixel electrode is in contact with a portion of the color filter in the first ~~second~~ opening.

62. (Previously Presented) A device according to claim 56, wherein the semiconductor film comprises crystalline silicon.

63. (Canceled)

64. (Previously Presented) A device according to claim 58, wherein the semiconductor film comprises crystalline silicon.

65. (Previously Presented) A device according to claim 59, wherein the semiconductor film comprises crystalline silicon.

66. (Canceled)

67. (Previously Presented) A device according to claim 61, wherein the semiconductor film comprises crystalline silicon.

68. (Currently Amended) A device according to claim 46, wherein the semiconductor device further comprising:

[[a]] an organic resin film over the color filter;
an electrode over the organic resin film; and

an oxide film of the electrode in direct contact with at least a portion of a surface of the electrode,

wherein the pixel electrode is in direct contact with at least a portion of the oxide film, and

wherein a storage capacitor comprises the electrode and the pixel electrode with the oxide film interposed therebetween.

69. (Canceled)

70. (Currently Amended) A device according to claim 52, wherein the semiconductor device further comprising:

[[a]] an organic resin film over the color filter;

an electrode over the organic resin film; and

an oxide film of the electrode in direct contact with at least a portion of a surface of the electrode,

wherein the pixel electrode is in direct contact with at least a portion of the oxide film, and

wherein a storage capacitor comprises the electrode and the pixel electrode with the oxide film interposed therebetween.

71. (Previously Presented) A device according to claim 46, wherein the semiconductor film further comprises LDD regions between the channel forming region and the source and drain regions.

72. (Canceled)

73. (Previously Presented) A device according to claim 52, wherein the semiconductor film further comprises LDD regions between the channel forming region and the source and drain regions.

74. (Previously Presented) A device according to claim 56, wherein the semiconductor film further comprises LDD regions between the channel forming region and the source and drain regions.

75. (Canceled)

76. (Previously Presented) A device according to claim 58, wherein the semiconductor film further comprises LDD regions between the channel forming region and the source and drain regions.

77. (Previously Presented) A device according to claim 46, further comprising a driver circuit comprising a second thin film transistor,

wherein the first thin film transistor is included in a pixel matrix circuit, and

wherein the pixel matrix circuit and the driver circuit are formed over an insulating surface.

78. (Previously Presented) A device according to claim 47, further comprising a driver circuit comprising a second thin film transistor,
wherein the first thin film transistor is included in a pixel matrix circuit, and
wherein the pixel matrix circuit and the driver circuit are formed over an insulating surface.

79-80. (Canceled)

81. (Previously Presented) A device according to claim 52, further comprising a driver circuit comprising a second thin film transistor,
wherein the first thin film transistor is included in a pixel matrix circuit, and
wherein the pixel matrix circuit and the driver circuit are formed over an insulating surface.

82. (Canceled)

83. (Previously Presented) A device according to claim 56, further comprising a driver circuit comprising a second thin film transistor,
wherein the first thin film transistor is included in a pixel matrix circuit, and
wherein the pixel matrix circuit and the driver circuit are formed over an insulating surface.

84. (Canceled)

85. (Previously Presented) A device according to claim 58, further comprising a driver circuit comprising a second thin film transistor,

wherein the first thin film transistor is included in a pixel matrix circuit, and

wherein the pixel matrix circuit and the driver circuit are formed over an insulating surface.

86. (Previously Presented) A device according to claim 59, further comprising a driver circuit comprising a second thin film transistor,

wherein the first thin film transistor is included in a pixel matrix circuit, and

wherein the pixel matrix circuit and the driver circuit are formed over an insulating surface.

87. (Canceled)

88. (Previously Presented) A device according to claim 61, further comprising a driver circuit comprising a second thin film transistor,

wherein the first thin film transistor is included in a pixel matrix circuit, and

wherein the pixel matrix circuit and the driver circuit are formed over an insulating surface.

89. (Previously Presented) A device according to claim 46, wherein the semiconductor device is selected from the group consisting of a personal computer, a video camera, a mobile

computer, a goggle type display, a player that uses a recording medium, a camera, a projector, a portable telephone, a portable book and a display device.

90. (Previously Presented) A device according to claim 47, wherein the semiconductor device is selected from the group consisting of a personal computer, a video camera, a mobile computer, a goggle type display, a player that uses a recording medium, a camera, a projector, a portable telephone, a portable book and a display device.

91. (Canceled)

92. (Previously Presented) A device according to claim 52, wherein the semiconductor device is selected from the group consisting of a personal computer, a video camera, a mobile computer, a goggle type display, a player that uses a recording medium, a camera, a projector, a portable telephone, a portable book and a display device.

93. (Previously Presented) A device according to claim 56, wherein the semiconductor device is selected from the group consisting of a personal computer, a video camera, a mobile computer, a goggle type display, a player that uses a recording medium, a camera, a projector, a portable telephone, a portable book and a display device.

94. (Canceled)

- 95. (Previously Presented) A device according to claim 58, wherein the semiconductor device is selected from the group consisting of a personal computer, a video camera, a mobile computer, a goggle type display, a player that uses a recording medium, a camera, a projector, a portable telephone, a portable book and a display device.

96. (Previously Presented) A device according to claim 59, wherein the semiconductor device is selected from the group consisting of a personal computer, a video camera, a mobile computer, a goggle type display, a player that uses a recording medium, a camera, a projector, a portable telephone, a portable book and a display device.

97. (Canceled)

98. (Previously Presented) A device according to claim 61, wherein the semiconductor device is selected from the group consisting of a personal computer, a video camera, a mobile computer, a goggle type display, a player that uses a recording medium, a camera, a projector, a portable telephone, a portable book and a display device.

99. (Previously Presented) A device according to claim 46 wherein said color filter has a flat upper surface.

100. (Previously Presented) A device according to claim 47 wherein said color filter has a flat upper surface.

101. (Canceled)

102. (Previously Presented) A device according to claim 52 wherein said color filter has a flat upper surface.

103. (Previously Presented) A device according to claim 56 wherein said color filter has a flat upper surface.

104. (Canceled)

105. (Previously Presented) A device according to claim 58 wherein said color filter has a flat upper surface.

106. (Previously Presented) A device according to claim 59 wherein said color filter has a flat upper surface.

107. (Canceled)

108. (Previously Presented) A device according to claim 61 wherein said color filter has a flat upper surface.

109-118. (Canceled)

119. (Previously Presented) A device according to claim 46, further comprising one or more gate electrodes in addition to the gate electrode.

120. (Previously Presented) A device according to claim 47, further comprising one or more gate electrodes in addition to the gate electrode.

121. (Canceled)

122. (Previously Presented) A device according to claim 52, further comprising one or more gate electrodes in addition to the gate electrode.

123. (Previously Presented) A device according to claim 56, further comprising one or more gate electrodes in addition to the gate electrode.

124. (Canceled)

125. (Previously Presented) A device according to claim 58, further comprising one or more gate electrodes in addition to the gate electrode.

126. (Previously Presented) A device according to claim 59, further comprising one or more gate electrodes in addition to the gate electrode.

127. (Canceled)

128. (Previously Presented) A device according to claim 61, further comprising one or more gate electrodes in addition to the gate electrode.

129. (Previously Presented) A device according to claim 46, wherein the gate electrode is covered by the interlayer insulating film.

130-138. (Canceled)

139. (Previously Presented) A device according to claim 46, further comprising a second conductive layer formed over the interlayer insulating film and electrically connected to the other of the source and drain regions of the first thin film transistor,

wherein the color filter covers an entire surface of the first conductive layer and an entire surface of the second conductive layer except for a part of the first conductive layer overlapping the second opening through which the pixel electrode is electrically connected to the first conductive layer.

140. (Previously Presented) A device according to claim 47, further comprising a second conductive layer formed over the interlayer insulating film and electrically connected to the other of the source and drain regions of the first thin film transistor,

wherein the color filter covers an entire surface of the first conductive layer and an entire surface of the second conductive layer except for a part of the first conductive layer overlapping the second opening through which the pixel electrode is electrically connected to the first conductive layer.

141. (Previously Presented) A device according to claim 52, further comprising a second conductive layer formed over the interlayer insulating film and electrically connected to the other of the source and drain regions of the first thin film transistor,

wherein the color filter covers an entire surface of the first conductive layer and the second conductive layer except for a part of the first conductive layer overlapping the second opening through which the pixel electrode is electrically connected to the first conductive layer.

142. (Previously Presented) A device according to claim 56, further comprising a second conductive layer formed over the interlayer insulating film and electrically connected to the other of the source and drain regions of the first thin film transistor,

wherein the color filter covers an entire surface of the first conductive layer and an entire surface of the second conductive layer except for a part of the first conductive layer overlapping the second opening through which the pixel electrode is electrically connected to the first conductive layer.

143. (Previously Presented) A device according to claim 58, further comprising a second conductive layer formed over the interlayer insulating film and electrically connected to the other of the source and drain regions of the first thin film transistor,

wherein the color filter covers an entire surface of the first conductive layer and an entire surface of the second conductive layer except for a part of the first conductive layer overlapping the second opening through which the pixel electrode is electrically connected to the first conductive layer.

144. (Previously Presented) A device according to claim 59, further comprising a second conductive layer formed over the interlayer insulating film and electrically connected to the other of the source and drain regions of the first thin film transistor,

wherein the color filter covers an entire surface of the first conductive layer and an entire surface of the second conductive layer except for a part of the first conductive layer overlapping the second opening through which the pixel electrode is electrically connected to the first conductive layer.

145. (Previously Presented) A device according to claim 61, further comprising a second conductive layer formed over the interlayer insulating film and electrically connected to the other of the source and drain regions of the first thin film transistor,

wherein the color filter covers an entire surface of the first conductive layer and an entire surface of the second conductive layer except for a part of the first conductive layer overlapping the second opening through which the pixel electrode is electrically connected to the first conductive layer.

146. (New) A device according to claim 46, wherein the semiconductor device is incorporated in a display over diagonal 30 inch.

147. (New) A device according to claim 47, wherein the semiconductor device is incorporated in a display over diagonal 30 inch.

148. (New) A device according to claim 52, wherein the semiconductor device is

incorporated in a display over diagonal 30 inch.

149. (New) A device according to claim 56, wherein the semiconductor device is incorporated in a display over diagonal 30 inch.

150. (New) A device according to claim 58, wherein the semiconductor device is incorporated in a display over diagonal 30 inch.

151. (New) A device according to claim 59, wherein the semiconductor device is incorporated in a display over diagonal 30 inch.

152. (New) A device according to claim 61, wherein the semiconductor device is incorporated in a display over diagonal 30 inch.

153. (New) A device according to claim 46, wherein the color filter includes a flattening function.

154. (New) A device according to claim 47, wherein the color filter includes a flattening function.

155. (New) A device according to claim 52, wherein the color filter includes a flattening function.

156. (New) A device according to claim 56, wherein the color filter includes a flattening function.

157. (New) A device according to claim 58, wherein the color filter includes a flattening function.

158. (New) A device according to claim 59, wherein the color filter includes a flattening function.

159. (New) A device according to claim 61, wherein the color filter includes a flattening function.

160. (New) A device according to claim 46,
wherein the color filter is colored with three colors R, G, and B,
wherein a R, G, B color matrix includes a stripe shape.

161. (New) A device according to claim 47,
wherein the color filter is colored with three colors R, G, and B,
wherein a R, G, B color matrix includes a stripe shape.

162. (New) A device according to claim 52,
wherein the color filter is colored with three colors R, G, and B,
wherein a R, G, B color matrix includes a stripe shape.

163. (New) A device according to claim 56,

wherein the color filter is colored with three colors R, G, and B,

wherein a R, G, B color matrix includes a stripe shape.

164. (New) A device according to claim 58,

wherein the color filter is colored with three colors R, G, and B,

wherein a R, G, B color matrix includes a stripe shape.

165. (New) A device according to claim 59,

wherein the color filter is colored with three colors R, G, and B,

wherein a R, G, B color matrix includes a stripe shape.

166. (New) A device according to claim 61,

wherein the color filter is colored with three colors R, G, and B,

wherein a R, G, B color matrix includes a stripe shape.